

# Raising Dairy Herd Replacement Heifers

Department of Agricultural Economics — [www.agmanager.info](http://www.agmanager.info)



Kansas State University Agricultural Experiment Station and Cooperative Extension Service

**Kevin C. Dhuyvetter**  
Agricultural Economist  
Farm Management

**Micheal Brouk**  
Animal Scientist, Dairy

**Joseph P. Harner, III**  
Agricultural Engineer  
Grain and Livestock Systems

Having good replacements for the cows that leave the milking herd each year is a key to maintaining and increasing herd production. One of the decisions facing dairy producers is whether to raise or purchase replacement heifers. To raise replacements requires the use of equity for additional facilities, feed, and labor. Producers expanding their operations may find it advantageous to put their equity into cows and purchase replacement heifers or have them raised by custom growers. However, even when producers choose to raise their own replacement heifers, it is useful to treat the heifers as a separate enterprise so that the economic strengths and weaknesses of their operation can be identified.

## Budget Information

The costs and returns in the budget are on a per-bred-heifer-sold basis. Costs are total economic costs and therefore include operator labor and all opportunity costs. Returns are based on selling 92 percent of the heifers as bred replacements (springers), 4 percent as nonbreeders, and 4 percent that are culled as yearlings. Death loss is assumed to be 10 percent which raises the cost of the heifer calves purchased. In addition to income from heifers, a manure credit is included to reflect the possible sale of manure (or value captured if used on producer owned land). The manure credit is based on nitrogen (N) and phosphate ( $P_2O_5$ ) excreted per heifer that would be available for crop or forage production valued at commercial fertilizer rates less an application cost.

Feed costs account for a large portion of the total cost of raising a replacement heifer. The feed costs associated with different stages of growth are shown in Table 1. Feed cost has been adjusted to account for death loss of calves and heifers sold early (yearlings) and shrink/wastage. Labor costs are based on 10 hours per heifer from birth to 24 months. Labor requirements are quite intensive the first three months of age. Subsequently, only routine labor is needed for feeding, tending, and observing the heifers with labor requirements increasing as heifers reach breeding age. It is important to recognize that labor costs per head will vary tremendously between operations due to the number of heifers being raised. Machinery costs include fuel used for observing heifers on pasture, while building repairs include costs of repairing buildings and fences. Interest on variable costs is computed on one-half of the total operating costs at the current interest rate for two years. Similarly, interest is charged on the cost of the heifer calf for two years.

Depreciation is based on the total original cost less the salvage value of buildings and equipment on a per heifer basis divided by the estimated life. The budget value is based on a total investment of buildings and improvements of \$750 per head and an investment of \$180 per head for equipment. The useful life is assumed to be 20 years for buildings and 15 years for equipment. A salvage value of 10 percent is assumed on buildings and equipment. Interest is charged on one-half the average investment [(initial cost + salvage value) ÷ 2] for buildings and equipment at a rate of 6.5 percent. Insurance and taxes on buildings and equipment is based

**Table 1.** Feed Requirements for Raising Replacement Heifer (birth to 24 months).\*

Feed Item	Birth to 6 months		6 to 12 months**		12 to 24 months	
	Lbs or Acres	Dollars	Lbs or Acres	Dollars	Lbs or Acres	Dollars
Milk replacer @ \$150.80 per cwt.	59.0	\$88.91				
Calf starter (18%) @ \$26.45 per cwt.	244	64.46				
Calf grower (16%) @ \$18.55 per cwt.	499	92.55				
Corn gluten feed @ \$13.20 per cwt.			187	\$24.74	1,022	\$134.91
Corn, cracked @ \$12.48 per cwt.			202	25.25	335	41.83
Soybean hulls @ \$212.13 per ton			439	46.57	335	35.56
Alfalfa hay (high) @ \$249.07 per ton	281	34.99				
Grass hay (prairie) @ \$127.78 per ton	219	13.98	619	39.53	2,808	179.40
Pasture @ \$20.76 per acre			2.88	59.80	10.96	227.46
Minerals (w/lasalocid) @ \$37.65 per cwt.			61	22.96	117	43.88
<b>FEED COST PER PERIOD</b>		<b>\$294.88</b>		<b>\$218.84</b>		<b>\$663.04</b>
<b>TOTAL FEED COSTS (Birth to 24 months)</b>		<b>\$1,176.76</b>				

\* Pound, acre and dollar amounts have been adjusted to account for death loss and yearling heifer sales.

\*\* Pound, acre and dollars amounts reflect an average of drylot and grazing diets throughout the year.

on the original cost times 0.25 percent for insurance and 1.5 percent for taxes (buildings only). The annual cost of buildings and equipment (depreciation, interest, taxes, and insurance) is multiplied by two because the budget covers a 24-month time period.

Net return on assets is the percentage return on investment capital (both borrowed and equity). This measure has been converted to an annual basis to enable comparisons to be made between enterprises as well as other investment alternatives.

### COST-RETURN PROJECTION—DAIRY HERD REPLACEMENT

	Projected Budget	Your Farm
<b>RETURNS PER BRED HEIFER SOLD</b>		
1. Springer heifer: 0.92 hd × \$1,189/hd.....	\$ 1,093.88	_____
2. Cull heifer: 0.040 hd × 1,250 lbs @ \$99.20/cwt.....	49.60	_____
3. Yearling heifer: 0.040 hd × 725 lbs @ \$127.04/cwt.....	36.84	_____
4. Less initial value of heifer: \$200/hd + 10.0% death loss.....	-220.00	_____
5. Less interest on heifer calf investment.....	-12.38	_____
6. Manure credit.....	14.25	_____
<b>A. GROSS RETURNS PER HEIFER SOLD.....</b>	<b>\$ 962.19</b>	_____
<b>COSTS PER HEIFER SOLD:</b>		
7. Feed — birth to springer (Table 1).....	\$ 1,176.76	_____
8. Labor (10 hrs @ \$13.50 per hr).....	135.00	_____
9. Veterinary, drugs, and supplies.....	30.00	_____
10. Breeding costs for A.I. services.....	30.00	_____
11. Transportation and marketing costs.....	27.85	_____
12. Utilities, fuel, and oil.....	22.28	_____
13. Building and equipment repairs.....	20.13	_____
14. Miscellaneous.....	20.00	_____
15. Depreciation on buildings and equipment.....	38.57	_____
16. Interest on buildings and equipment.....	28.78	_____
17. Insurance and taxes on building & equipment.....	11.75	_____
<b>B. SUBTOTAL.....</b>	<b>\$ 1,541.13</b>	_____
18. Interest on ½ operating costs for 10 months.....	41.14	_____
<b>C. TOTAL COSTS PER HEIFER SOLD.....</b>	<b>\$ 1,582.26</b>	_____
<b>D. RETURNS OVER TOTAL COSTS (A-C).....</b>	<b>\$ -620.08</b>	_____
<b>E. SPRING HEIFER BREAK-EVEN PRICE, \$/head.....</b>	<b>\$ 1,878.48</b>	_____
19. Total cost per head per day.....	\$ 5.08	_____
20. Total cost per pound of gain.....	\$ 1.41	_____
<b>F. ASSET TURNOVER (A ÷ (Assets × 2))<sup>1</sup>.....</b>	<b>41.8%</b>	_____
<b>G. ANNUAL NET RETURN ON ASSETS</b>		
((D + 16 + 18 - 5) ÷ (Assets × 2)) <sup>1</sup> .....	-23.38%	_____

<sup>1</sup> Total assets = (value of heifer calf plus building and equipment investment)

Publications from Kansas State University are available at: [www.ksre.ksu.edu](http://www.ksre.ksu.edu).

Publications are reviewed or revised annually by appropriate faculty to reflect current research and practice. Date shown is that of publication or last revision. Contents of this publication may be freely reproduced for educational purposes. All other rights reserved.

In each case, credit Kevin C. Dhuyvetter et al., *Raising Dairy Herd Replacements*, Kansas State University, December 2012.

**Kansas State University Agricultural Experiment Station and Cooperative Extension Service**

MF399

December 2012

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, John D. Floros, Director.